THE DRY TREATMENT FOR OPEN WOUNDS AND ULCERS.

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THE application of the germ theory to the treatment of open wounds should not stop with Listerism or antisepsis. Asepsis is what we strive for, but the methods most in use are practically but little more that antisepsis or germ poisoning.

The following experiments were undertaken for the purpose of finding a method of cure for open wounds that would operate somewhat in the same manner as the closure and healing of incised wounds by primary union, viz., without sepsis and without suppuration. I had been disappointed with germicides, because they neither prevented suppuration in an open wound, nor rapidly checked it. I therefore discarded them, and strove to imitate the natural method of healing of small superficial wounds when left alone, viz., to dry the wound and keep it dry; or, failing in this, to drain off the fluid so constantly that the same fluid would not remain in contact with the wounded surface for the development of germs in it. Having accomplished this to my complete satisfaction, I applied the same methods to suppurating wounds, and was equally well satisfied.

The method consists in applying abundant capillary drainage to every portion of the wound, even the minutest, and changing the drainage material before it becomes saturated or clogged. Thus the fluid is drained from the surface almost as fast as formed, and any germs that may be present are removed with the dressing as often as desirable. At each dressing the surrounding soiled surfaces are cleansed, the wound tissue dried off with absorbent material, and new drainage applied.

Before formulating my experience I will record a few of the cases which served as experiments.

CASE 1. *Abdominal Oophorectomy for Abscesses of Fallopian Tube and Ovary.* Mrs. Sc , St Luke's Hospital, March, 1890. On account of hæmorrhage at the operation I tamponed the pelvis with iodoform gauze, removing the last in ten days. There was left an open wound in the cellular tissue of the abdominal walls one inch wide, one inch deep and one and a half inch long, extending to the peritoneum. The surfaces of this wound were dried off with sublimated absorbent cotton and then packed with the same. The surrounding cutaneous surface was washed with alcohol and plentifully dusted over with iodoform powder, avoiding the cotton packing. Over this was laid sublimated gauze and then more cotton. Dressings were changed every 6 hours for the first 2 days, then every 8, then every 12, then every 24 hours. Four weeks from the date of the operation she went home with the wound healed, and without having had any suppuration whatever, nor any temperature except a slight rise immediately following the operation.

CASE 2. *Removal of Suppurating Kidney by Laparotomy. Drainage through Loin by Iodoform Gauze. Removal of Gauze in 30 Hoars.* Mrs. Wm. S., Woman's Hospital, April 5, 1890. A gaping wound was left in the subcutaneous cellular tissue and muscle an inch long by an inch deep and half an inch wide. This was packed with iodoform gauze three times daily for two days, then twice daily with plain absorbent cotton, later once daily. After it was almost obliterated, viz., $^1/_2$ inch long by $^1/_4$ inch wide and $^1/_8$ inch deep, I allowed the cotton packing, as an experiment, to remain for 2 and 3 days at a time. Although suppuration did not supervene, yet the wound stopped contracting until I returned to daily dressings, when it rapidly healed.

CASE 3. *Mole Removed from Temple.* April 18 (same time as hysterectomy performed). Mrs. P.A.P., æt. 41 years. Woman's Hospital. After the stitches were removed the patient infected the wound by scratching, so that a scab formed with pus under it. Thus a suppurating wound resulted an inch long and $^1/_3$ inch wide. This was wiped dry and dry absorbent cotton applied to it twice a day, and, after two days, once a day. In a few days there was a small raw surface $^3/_4$ inch long by $^1/_4$ inch wide, smooth and red without inflammation, sensitiveness or suppuration. It was healed in 8 or 10 days. I do not find the date of cure recorded, but remember the case well.

CASE 4. *Bed Sore.* Mrs P.A.P., æt. 41 years; Woman's Hospital. Abdominal hysterectomy, April 18, 1890. (See case 3)

A bed sore 2 by 2½ inches had developed, and, when I examined it May 10, was suppurating and looking inflamed about the edges. I stopped the antiseptic oil dressings that had been used, had the skin around it washed off with alcohol, the suppurating surface (in the midst of which was a piece of black necrosed skin) dried off with plain absorbent cotton, and then packed with the plain cotton. This was done twice daily. In 2 days I tore off the necrosed tissue and had the wound dressed once a day. In 5 days, May 15, it was but little over half its former size, and discharged so little that it was hard to get the cotton off at each dressing. In another week it had healed.

CASE 5. Mrs. Wm. S., Woman's Hospital, April, 1890.

April 24, 19 days after a laparotomy, an abscess containing half a drachm of pus discharged from the abdominal incision. Size of cavity $^{2}/_{3}$x$^{2}/_{3}$x$^{1}/_{4}$ inches. In this case I used plain absorbent cotton to wipe out and pack the cavity, and merely wiped off the surrounding skin, not using alcohol, iodoform, nor any drug. Absorbent cotton was laid over it. Dressings changed 4 times daily for 2 days, then 3 times. April 27 a piece of infected catgut was pulled up from the bottom of the wound, viz.: a part of that with which the peritoneum was sewed. May 1, discharge serous in character. May 3, 1 dressing in 24 hours. The wound kept contracting after this and the discharge remained serous, but every few days the hospital interne would get a little more catgut from the bottom. The wound was almost healed when the patient left the hospital, two weeks after the operation.

I learn that the wound did not heal for two weeks after the patient left, and suppose that infected catgut was still causing irritation. The fact that in spite of infected catgut the suppuration was so rapidly checked without germicides, and the wounded surfaces put in a condition for healing without suppuration, makes the case worth recording.

CASE 6. *Suppuration after Alexander's Operation.* Mrs. O H.H., Woman's Hospital. Alexander's operation Jan. 14, 1890. One of the wounds suppurated. The nurse allowed a pus pocket to remain after the surface was healed, so that the patient went home in five weeks with a pus pocket which had a small outlet. After trying frequent antiseptic douches and dressings for 3 weeks longer I laid open the wound under anæsthesia. Nevertheless another pus pocket formed and the same condition was renewed. I then laid it open as well as I could by one quick incision, and taught the husband how to use the dry dressings. In about two days he became discouraged because it was not doing well. I told him all that remained then was to go back to the bichloride or carbolic acid dressings. In about three weeks he called upon me and told me that he had tried the antiseptics again, and as it was almost immediately apparent that the wound was not doing as well, he went back to the dry dressing. In a short time a cure was effected.

I have applied the method, and am constantly applying it to all forms of simple wounds in which the absorbent material can be made to reach all parts of the wound, and in which I can obtain a frequent dressing for the first few days, or until the amount of discharge becomes inconsiderable. In suppurating wounds the dressings must at first be changed more frequently, but afterwards their treatment is not different from that of fresh wounds.

I also apply the principle to the drainage holes after laparotomy. As soon as the discharge has lost its bloody character, viz., on the second or third day, I remove the glass tube, and in case there is too much outflow to admit of closure of the orifice I push a folded strip of iodoform gauze down from 2 to 3 inches below the surface. This is changed every 24 hours, but pushed less deep each time.

In large wounds I have found gauze to act as well as, if not better than, cotton when it can be accurately adapted to the surfaces. The objection to its continued use is that granulations work into its meshes and are torn on its removal.

The use of alcohol to wash the surrounding skin, and iodoform gauze or sublimated gauze for packing may aid in the cure at times, but these antiseptics are not necessary, and are sometimes undesirable.

Between the cauterizations of venereal sores, the frequent change of dry absorbent cotton dressings has in my limited experience answered better than drugs.

I would formulate the method as follows :

1. Secure a large external opening.

2. Change the dressing often enongh to prevent an accumulation of moist discharge.

3. Dry off the surfaces at each dressing as perfectly as possible.

4. Place absorbent material firmly against every part of the raw surfaces, but leave the packing loose in the middle so that the cavity may more readily contract.

5. Place an abundance of absorbent material over the wound, so as to be in direct contact with the packing—no powder or drug intervening.

6. Use clean absorbent cotton for small wounds, gauze for large ones.

7. Cleanse the neighboring skin at each dressing with dry absorbent material, or wash it with alcohol, but allow no water, or watery solution to come in contact with the wound or its surroundings.